



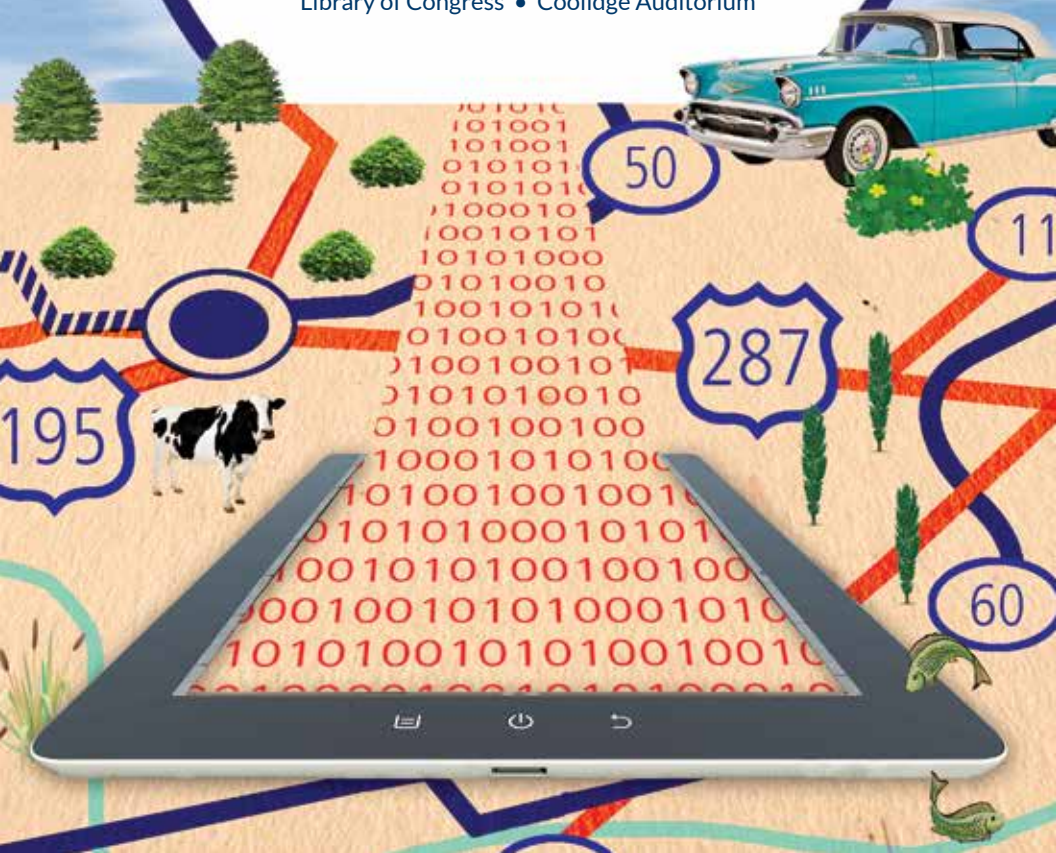
FROM TERRA TO TERABYTES

*The History of 20th Century
Cartography and Beyond*

Philip Lee Phillips Map Society
of the Library of Congress

May 15 - 16, 2014

Library of Congress • Coolidge Auditorium



Day 1

The study and science of cartography and its related geographical disciplines underwent profound technological and conceptual advancements in the twentieth century.

These advancements, brought about by the technological innovations in mapping during two world wars, the popularization of automobile and air travel, the advent of computers, the development of newer and faster mathematical and computational algorithms, and the birth of satellite imagery, all contributed to paradigm changes that can be considered revolutionary. Technological and conceptual improvements have generated new forms of data, maps, artifacts and forms of spatial analysis that differ radically from those typically archived in map libraries. This conference will look back at the long history of cartography in the 20th century and glance at what is coming in the future, as we more and more move away from traditional static paper maps, and enter a truly dynamic and computer based cartographic era.



9:00 am
Opening Remarks

9:30 -10:30 am
Keynote:
Mark Monmonier
Syracuse University



It is easy to argue that the period 1900 to 2000 is map history's most distinctive era. Technological advances during the twentieth century inspired two new modes of mapping practice, namely, overhead imaging and dynamic cartography, as well as a new multi-mode institution, academic cartography. Dynamic cartography is the most obvious aspect of the last century's electronic transition, which included the emergence of numerical modeling as a new form of map compilation focused on prediction and uncertainty, and which largely accounts for the paradox of globalized practices and customized content. Enhancing trends from earlier eras, mapping had a role in discovering and even claiming new territory, in the oceans and in space, and technology not only solidified the longstanding bond between maps and warfare but hastened the flowering of prohibitive cartography, which controls where we go and what we do. Maps also gained increasing prominence as tools of public administration, and the century witnessed diverse impacts of maps on society, including greater cartographic literacy, counter maps that challenge official narratives, and an expanded use of mapping in environmental protection and disaster management. Whether these changes collectively make the twentieth century (or its last half or third) a tipping point is problematic insofar as it is hardly clear whether the tilt is toward greatly enhanced personal freedom, massively increased government or corporate control, or a blurred commingling of maps with other forms of information and knowledge.

DAY 1

10:30 am - 12:30 pm

SESSION 1: POPULAR CARTOGRAPHY | WES BROWN, MODERATOR

Stephen Hornsby
University of Maine



★★ Picturing the World: ★★ *American Pictorial Maps* — 1920-1960 —



From the 1920s to the 1960s, American popular culture and commercial mapmaking intersected to produce a remarkably creative period in the history of Western cartography. During those years, dozens of graphic artists and cartographers created hundreds of pictorial maps depicting the history, geography, and culture of the United States and lands overseas. No other country the quantity, quality, and pictorial maps as the United States. Although now relatively unknown, pictorial maps were enormously popular during their heyday, decorating homes, schools, and clubs, and appearing in books, magazines, and newspapers. The maps reflected American culture, capturing the dynamism of the nation's burgeoning skyscraper cities, great industrial factories, and streamlined locomotives, airplanes, and automobiles, as well as portraying the country's fascination with its colonial and early Republican past. Pictorial maps also displayed advances in printing technology, particularly color lithography, and showcased the talents and originality of some of the

nation's leading graphic artists. By the Second World War, pictorial maps had created a powerful visual image of the United States, and were beginning to re-imagine the look of the world for a mass consumer audience. Image source: Pictorial maps from the Geography and Map Division collections, Library of Congress

James Akerman
Newberry Library

Road Mapping on the Margins

The free automobile road map was among the most iconic and widely distributed genres of twentieth-century cartography. When we speak of it, however, we usually have in mind one of the millions given away annually by oil companies, automobile clubs, or state authorities. At the margins of the

road-map mainstream is another archive of printed cartography, just as extensive, but largely ignored by cartographic scholars and collectors: road maps published by county and municipal authorities, roadside attractions, and other local economic interests. Published separately or buried in brochures, this is an elusive archive, cheap and ephemeral by nature, wildly varied in content and design, and rarely retained by institutional collections. From a technical point-of-view they often compare badly to their mainstream cousins, but they are arguably richer in what they tell us about the distribution and use of mapping for promotional purposes both before and after the digital divide, and certainly about the ways American localities saw themselves and wished to be seen by visitors.

The paper identifies the major classes of this material, reflecting on their formal and promotional characteristics, with particular emphasis of county maps and brochures issued by roadside businesses. The idiosyncratic nature of each production works against facile generalizations about this archive. But there is unity in this diversity, for these maps show the extent to which twentieth-century American road mapping was a democratic exercise. Image source: Esso promotional brochure



Ralph Ehrenberg
Library of Congress



Prior to airline deregulation and the launching of "live" audio programming and inflight movies, major airlines provided their passengers with complimentary airline route maps, which served as souvenirs of their flights. Designed to amuse, entertain and inform, these decorative maps promoted commercial aviation and individual air carriers, advertised oil companies and car rental agencies, illustrated the latest safety features of aircraft and aerial navigation techniques, and provided instruction on map reading, map projections, meteorology, and geography. Initially produced in the form of simple route maps in the 1920s, airline souvenir maps became increasingly complex in response to the introduction of high performance aircraft after World War II, the establishment of national and international airway infrastructures, and the development of airborne electronics and global positioning systems.

Image source: Thelma Todd featured on a TWA Airlines promotional brochure

12:30 - 2:00 pm
LUNCH

2:00 - 4:00 pm

SESSION 2: MILITARY AND INTELLIGENCE CARTOGRAPHY |
RYAN MOORE, MODERATOR

Keith Clarke
*University of CA at
Santa Barbara*



The CORONA program and its successors mapped much of the world using remote sensing technology well before it became better known after Landsat 1 in 1972. Using a film return system and a scanning stereo panchromatic camera, CORONA was capable of high geodetic fidelity, and repeat high resolution imagery. CORONA ran from 1958-1972, but was not declassified until 1995. Using six generations of cameras, the program produced over 800,000 images from space on 2.1 million feet of film. More important, the program revolutionized mapping, positioning and the automated processing of map data. In this presentation I will briefly survey the program, highlight some of the least well known elements, and elaborate on the landmark achievements of the program for world mapping and mapping technology since.

Timothy Barney
University of Richmond

THE RHETORICAL
LIVES OF COLD
WAR MAPS



With America's emergence as an international superpower in the wake of World War II, maps provided the strategic and ideological ground by which the ensuing Cold War would be fought. Specifically, the presentation traces how Cold War maps lived "rhetorical lives" in their processes of production and reception—designed through the collaborative practices of government, mass media, scientific agencies, and civic organizations, and serving the purposes of a host of different audiences over the course of their eventful circulations. The

American Federation of Labor's CIA-sponsored 'Gulag'—Slavery, Inc. map of 1951, plotting the existence of slave labor camps across the Soviet Union, is used here to exemplify how Cold War institutions drew on the rhetoric of cartography to fix and define the U.S.S.R. as a "containable" area and to articulate the United States' premium on spatial knowledge and surveillance. In the process, the case of 'Gulag'—Slavery, Inc. ultimately affirms how, despite their depiction of a seemingly fixed and bi-polar conflict, maps became central and vital markers of the Cold War's dynamic, active, and contested nature.

Laura Kurgan
Columbia University



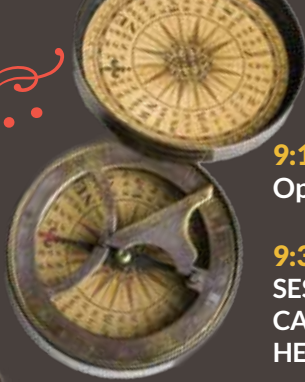
Close Up at a Distance reflects on the past two decades which have seen revolutionary shifts in our ability to navigate, inhabit, and define the spatial realm. The data flows that condition much of our lives now regularly include Global Positioning System (GPS) readings and satellite images of a quality once reserved for a few militaries and intelligence agencies, and powerful geographic information system (GIS) software is now commonplace. These new technologies have raised fundamental questions about the intersection between physical space and its representation, virtual space and its realization. This talk offers a theoretical account of these new digital technologies of location and a series of practical experiments in making maps and images with spatial data. Neither simply useful tools nor objects of wonder or anxiety, the technologies of GPS, GIS, and satellite imagery have become the subject and the medium of a critical exploration.

4:00 - 5:30 pm
RECEPTION
LJ-119



Image source: Advertisement for TWA, 1952

Day 2...



9:15 am
Opening Remarks

9:30 - 11:30 pm
SESSION 1: SCIENTIFIC
CARTOGRAPHY | JOHN
HEBERT, MODERATOR

Judith A. Tyner
California State
University



The Tip of the Iceberg:

*Marie Tharp and Women
in Mapping in the
Mid-twentieth Century*

Marie Tharp is now probably the best known female cartographer of the mid-twentieth century. However, she wasn't the only woman who got her start in cartography because of WWII. Thousands of women were trained in cartography during the war and, although largely unsung, many had long careers in the field. These women have only recently been recognized for their work; even Tharp's accomplishments were not extolled until late in her life. In this paper I look not only at Marie Tharp, but at the impact of WWII on women's inclusion in cartography.

Image source: Marie Tharp, marietharp.com

Philip Stooke
University of
Western Ontario

Map projections and cartographic procedures suitable for mapping the almost spherical Earth have been in use for two millennia, and were easily adapted for use with the Moon, Mars and other near-spherical worlds. Since 1971 spacecraft images have revealed small bodies with highly irregular shapes, including the satellites of Mars, many small moons of the outer planets, and asteroids and comet nuclei. Map projections and shape modeling methods have been devised for use with these objects, and many maps and digital image mosaics have been compiled. This presentation will summarize the topic and illustrate steps in the author's development of new mapping methods for these small but interesting objects.

**Mapping other
Worlds:**
*asteroids and other
non-spherical objects*

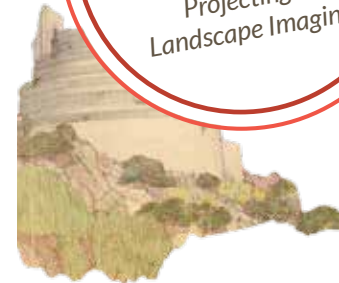


11:30 am - 1:30 pm
LUNCH

1:30 - 3:00 pm

SESSION 2: THE FUTURE OF CARTOGRAPHY AND GEODESIGN |
JACQUELINE NOLAN, MODERATOR

Jill Desimini
Harvard Graduate
School of Design



The ascendance of mapping and data visualization in design culture has changed the way architects, landscape architects and urban designers communicate ideas about buildings and landscapes, often privileging abstract forces and flows over the material conditions of the site. However, cartography is rich in representational techniques that afford great proximity to the ground itself. This talk argues for an intermingling of representational techniques from design and cartography and a leveraging of the geographic and territorial scope of the map toward the precision and instrumentality of the plan. The approaches presented here address the requirements of transcending scales, interactivity, big data and complex systems, while also grounding the design disciplines to the topographic and material conditions of particular places. As design extends its purview to cartography, an examination of the projective potential—and beauty—of cartographic representation is essential. The talk is structured around ten provocative pairings of plans and maps.

Image source: Architectural drawing, Prints and Photographs Division, Library of Congress

John Hessler
Library of Congress

**Looking for Maggie
and Possum**

*Agent-based Models, Cellular
Automata and the End
of Cartography*

The visualization of geographic spaces through cartographic images took on its modern form in the *Geographia*, a book of the second century by the geographer Claudius Ptolemy. Traditional cartographic images like these however, cannot represent the immaterial, mobile and transient dimensions of the wide range geographic phenomena that we see before us in our contemporary and globally defined world. These kinds

DAY 2

of visualizations, as useful as they might have been in the past, simplify the complex relationship between places even when trying to describe these spaces and phenomena thematically. The distances and the outlines of places, cities and features shown on these traditional maps miss the increasingly interconnected and interdependent relationships that exist on a global scale. These kinds of connections, brought about through the increasing globalization of economic phenomena, and the ease of information flow across networks, are only partially related to geographical distance and have an increasingly important temporal dimension. This paper will discuss the origins of the notions of time in cartography and geographical analysis by looking at the how some of the early pioneers in computer cartography represented time using simple computer models like Cellular automata. We will further show how these models represent the future of cartography and the death of the Ptolemaic project.



Image source: Nicolaus Germanus World Map in Claudius Ptolemy, *Cosmographia (Geographia)*, The Newberry

3:00 - 4:00 pm
FINAL KEYNOTE

Douglas Richardson
*Executive Director,
Association of
American Geographers*

Space-time integration in geography, GIScience, and cartography has long been the topic of study and speculation. However, an entirely new form of space-time integration has now become possible in GIS and GIScience: real-time space-time integration and interaction. While real-time spatiotemporal data is now being generated almost ubiquitously, and its applications in research and commerce are widespread and rapidly accelerating, the ability to create and continuously interact in real-time with fused space and time data in geography and GIScience is a recent phenomenon. It was made possible by the invention and development of real-time interactive (RTI) GPS/GIS technology and functionality in the late 1980s and

**REAL-TIME, SPACE-TIME
INTEGRATION IN GEOGRAPHY
AND CARTOGRAPHY**

early 1990s. This innovation has since functioned as a core change agent in geography, cartography, GIScience, and many related fields, profoundly realigning traditional relationships and structures, expanding research horizons, and transforming the ways geographic data is now collected, mapped, modeled, and used. Real-time space-time interactive functionality remains today the underlying process generating the current explosion of fused spatiotemporal data, new geographic research initiatives, and myriad geospatial applications in governments, businesses, and society. This talk addresses briefly the development of these real-time space-time functions and capabilities; their impact on geography, cartography, and GIScience; and some implications for how discovery and change can occur in GIScience and cartography, and how we might foster continued innovation in these fields.

May 17
OPEN HOUSE
G-15

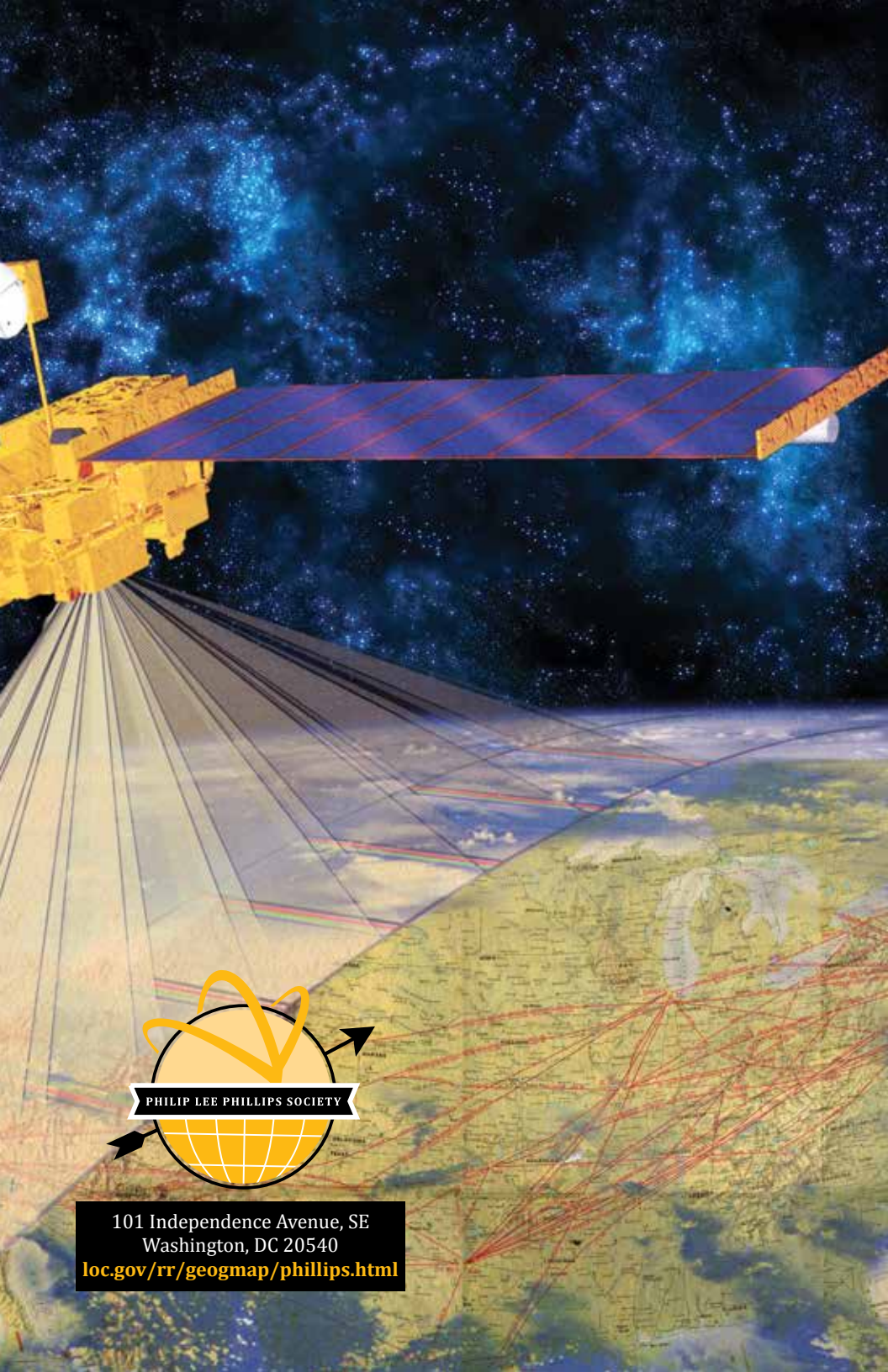


Join us on Saturday, May 17 from 9:30 am to 12:00 pm, for an open house and tour of the Geography and Map Division Room G-15, James Madison Building of the Library of Congress.

ABOUT THE PHILIP LEE PHILLIPS MAP SOCIETY OF THE LIBRARY OF CONGRESS

The Philip Lee Phillips Map Society has been established to further develop, enhance and promote the collections of the Geography and Map Division by encouraging financial donations to supplement appropriated funds for the acquisition of rare maps; stimulating interest among map collectors, map producers, geographers, cartographers, and historians in order to make the vast resources of the nation's premier cartographic and geographic collections more widely available; facilitating gifts and bequests of significant geographic and cartographic materials in order to further develop its collections; and advancing the Geography and Map Division's publication, education, and exhibition programs.

The Society is named in honor of Philip Lee Phillips (1857-1924), the first Superintendent of Maps when the Hall of Maps and Charts was established in 1897.



101 Independence Avenue, SE
Washington, DC 20540
loc.gov/rr/geogmap/phillips.html